

CLAIMS

1.- A system for real time correction of light output and/or colour of an image displayed on a display device (1), the system comprising:

- a display device (1) comprising an active display area (6) for displaying the image, an image forming device (2) and an electronic driving system (4) for driving the image forming device (2),
- an optical sensor unit (10) comprising an optical aperture (21) and a light sensor (22) having an optical axis, to make optical measurements on a light output from a representative part of the active display area (6) of the image forming device (2) and generating optical measurement signals (11) therefrom,
- a feedback system (12) receiving the optical measurement signals (11) and on the basis thereof controlling the electronic driving system (4), wherein the optical aperture (21) of the optical sensor unit (10) has an acceptance angle such that at least 50%, alternatively 60%, alternatively 70%, alternatively 75% of the light received by the light sensor (22) comes from light travelling within 15° of the optical axis of the light sensor (22).

2.- A system according to claim 1, wherein the optical measurements are luminance measurements.

20 3.- A system according to claim 2, wherein light output correction comprises luminance and/or contrast correction.

4.- A system according to claim 1, wherein the optical sensor unit (10) furthermore comprises a light guide (34) between the optical aperture (21) and the light sensor (22).

25 5.- A system according to claim 4, wherein the light guide (34) is a light pipe.

6.- A system according to claim 5, wherein the light pipe is coated in order to shield ambient light.

7.- A system according to claim 6, wherein the coating (36) does not penetrate into the material of the light pipe.

30 8.- A system according to claim 4, wherein the light guide is (34) an optical fibre (32).

9.- A system according to claim 1, wherein the optical aperture (21) of the optical sensor unit (10) masks a portion of the active display area (6), while the light sensor (22) does not mask any part of the active display area (6).

10.-A system according to claim 1, wherein the optical sensor unit stands out above the active display area a distance of 5 mm or less.

11.-A system for real time correction of light output and/or colour of an image displayed on a display device (1), the system comprising:

5 - a display device (1) comprising an active display area (6) for displaying the image, an image forming device (2), and an electronic driving system (4) for driving the image forming device (2),

10 - an optical sensor unit (10) comprising an optical aperture (21) and a light sensor (22) having an optical axis, to make optical measurements on a light output from a representative part of the active display area (6) of the image forming device (2) and generating optical measurement signals (11) therefrom,

15 - a feedback system (12) receiving the optical measurement signals (11) and on the basis thereof controlling the electronic driving system (4),

wherein the optical aperture (21) of the optical sensor unit (10) has an acceptance angle such that light arriving at an angle with the optical axis of the light sensor (22) which is 10° or greater is attenuated by at least 25%, light arriving at an angle of 20° or greater is attenuated by at least 55% and light arriving at an angle of 35° or greater is attenuated by at least 85%.

20 12.-A system according to claim 11, wherein the optical measurements are luminance measurements.

13.-A system according to claim 12, wherein light output correction comprises luminance and/or contrast correction.

14.-A system according to claim 11, wherein the optical sensor unit (10) furthermore comprises a light guide (34) between the optical aperture (21) and the light sensor (22).

25 15.-A system according to claim 14, wherein the light guide (34) is a light pipe.

16.-A system according to claim 15, wherein the light pipe is coated in order to shield ambient light.

30 17.-A system according to claim 16, wherein the coating (36) does not penetrate into the material of the light pipe.

18.-A system according to claim 14, wherein the light guide is (34) an optical fibre (32).

19.-A system according to claim 11, wherein the optical aperture (21) of the optical sensor unit (10) masks a portion of the active display area (6), while the light sensor (22) does not mask any part of the active display area (6).

20.-A system according to claim 11, wherein the optical sensor unit stands out above the active display area a distance of 5 mm or less.

21.-A system according to any of claims 1 to 20, wherein the representative part of the active display area (6) of the image forming device (2) is less than 1% of the area of the active display area (6) of the image forming device (2), preferably less than 0.1%, still more preferred less than 0.01%.

10 22.-A method for real time correction of light output and/or colour of an image displayed on a display device (1), comprising:
- displaying the image on an active display area (6) on the display device (1),
- making optical measurements on light emitted from a representative part of the active display area (6) and generating optical measurement signals (11) therefrom,
- controlling the display of the image on the active display area (6) in accordance with the optical measurement signals (11),
wherein the step of making optical measurements comprises selecting light such that the ratio between the amount of light used for control which is emitted or reflected from the display area at a subtended acceptance angle of 30° or less to the amount of light used for control which is emitted or reflected from the display area at a subtended acceptance angle of greater than 30° is X:1 where X is 1 or greater.

15 23.-A method according to claim 22, for carrying out luminance measurements.

20 24.-A method according to claim 23, wherein light output correction comprises luminance and/or contrast correction.

25 25.-A method for real time correction of light output and/or colour of an image displayed on a display device (1), comprising:
- displaying the image on an active display area (6) on the display device (1),
- making optical measurements on light emitted from a representative part of the active display area (6) and generating optical measurement signals (11) therefrom,
- controlling the display of the image on the active display area (6) in accordance with the optical measurement signals (11),

12345678901234567890

wherein the step of making optical measurements comprises attenuating light travelling at angles with a normal to the active display area (6) which are equal to or larger than 10° by at least 25%, attenuating light travelling at angles with a normal to the active display area (6) which are equal to or larger than 20° by at least 55%, and attenuating light travelling at angles with a normal to the active display area (6) which are equal to or larger than 35° by at least 85%.

5 26.-A method according to claim 25, for carrying out luminance measurements.

27.-A method according to claim 26, wherein light output correction comprises luminance and/or contrast correction.

10 28.-A method according to any of claims 22 to 27, wherein the step of making optical measurements comprises transmitting light from within the active display area (6) to outside the active display area (6).